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have been suppressed, and how the most pestilential spots on earth may be converted into healthful habitations for man. Scientific medicine has made these demonstrations and the world applauds, but seems slow to make general application of the rules of hygiene.

Dr. Foster had experienced the doctor's dream when he said to you in 1909:

I look forward with confidence to the time when preventable diseases will be prevented, and when curable diseases will be recognized in the curable stage and will be cured, and I believe the grandest triumphs of civilization will be the achievements which will result from a realization of the possibilities of preventive medicine.

Professor Fischer, a most earnest and intelligent student of the prevention of sickness and the deferring of death has stated that "by the intelligent application of our present knowledge, the average span of human life may be increased full fifteen years."

It has been proposed that the life insurance companies represented here seek to prolong the lives of their policyholders by offering them free medical reexamination at stated intervals. It has been shown that in all probability this would financially benefit the companies in the increased longevity of their policyholders and the increased number of premiums they would pay. This is a business proposition, and I hope that the companies will inaugurate it and thus demonstrate that the lessening of sickness and the deferring of death will pay. Let the insurance men join the doctors and help in the great work for the uplift of the race through the eradication of unnecessary disease and premature death. In this way we can hasten the coming of the better man by making the doctor's dream a reality. I am confident that you will do this, not because it will

pay, but because it is the highest service you can render humanity.

VICTOR C. VAUGHAN

UNIVERSITY OF MICHIGAN

*THE AMERICAN ASSOCIATION FOR THE
ADVANCEMENT OF SCIENCE
SCIENCE, EDUCATION AND DEMOCRACY¹*

SCIENCE, education and democracy—the three great enterprises of the modern world—are in no institution more completely represented than in this American Association for the Advancement of Science and in its section of education. We are organized to advance science in all its range from the most esoteric deduction of the mathematician to the most homely contrivance of the inventor, and at the same time to diffuse scientific knowledge and scientific method among all who are willing to listen. Our membership includes the ablest scientific leaders and equally those who in Bishop Berkeley's phrase are "undebauched by learning." We migrate from place to place for our meetings in order that we may teach and learn in all parts of the country. We form more nearly a democracy of science than any other organization. Education is amalgamated with every section of our association, which is as completely an educational institution as is a university. And as the university, devoted throughout to education, yet may include a department or school of education, so we have conducted in recent years a section of education. This section is concerned with the place of the sciences in our educational system and with improving the methods of teaching them. It has also as its object, perhaps its principal object, the development of a science of education; for there is no other applied science—not agri-

¹ Address of the vice-president and chairman of the Section of Education of the American Association for the Advancement of Science, read at Atlanta, Ga., on December 31, 1913.

culture, nor engineering, nor medicine—of equal importance. It is also true that none is more backward and empiric, none in greater need of scientific principles and scientific methods.

The adequacy of much of our mathematical teaching is illustrated by the high-school boy's answer to the question "What follows when the three sides of a triangle are equal?", this being "The other side will be equal too." However that may be, science, education and democracy are the essential sides of the triangular base on which rests the pyramid of the civilization that we have, on which will stand even more solidly the better civilization that is to be. The foundations we can follow downward as far as we may fancy—to prehistoric and prehuman times, to metazoa and protozoa which learn by experience and have a certain equality of opportunity. In the long course of evolution, science and education always have been interrelated. Accumulated and transmitted knowledge has been the basis of education, and in turn education has made possible the accumulation and transmission of knowledge. Thus have come language and writing, the alphabet and printing, tools and machines, fire and shelter and clothing, the cultivation of plants and animals, fine arts and religions, sciences and their applications, codes of conduct and methods to enforce them.

During the historic period there has been a conflict between science and education, on the one side, and democracy, on the other. Among the lower animals and to a certain extent in savage tribes, there exists a kind of democracy and equality of opportunity. Each individual faces the world with the endowment received at birth, not greatly helped by the position of his family or his group. But when knowledge and education became so complicated that they could not be shared equally by all, when

wants increased to the extent that some had to be deprived in order that others might be gratified, when there was competition for property and wealth, then society was thrown into a patriarchal or feudal or despotic or oligarchic system. The material resources did not suffice to provide adequately for all; the stronger seized on them, and the many were compelled to toil in ignorance and poverty in order that the few might enjoy knowledge, leisure and luxury. Unto those who had was given and from those who had not was taken even that which they had. The system of individual, family, class, race and sex privilege gained the saddle and still rides us all.

The dominance of privilege was perhaps a necessary stage in social development. It may be that power and wealth concentrated in individuals, citizens and slaves, an aristocracy exploiting serfs, dependent women, subject races, were required to save the primitive state from submergence under savagery and barbarism, to develop its institutions, to promote science and the arts, to set standards of conduct. Plato provided slaves for his republic; the New Testament accepted Cæsar, slavery and the subjugation of women. When the resources of society were sufficient to provide adequately for only a part of its members, universal education and equality of opportunity could not exist. The masses were compelled to work incessantly for the bare necessities of life, in order that there might be classes in a position to advance science and the arts. When the average age at death was twenty years, the race could only be continued if women spent their lives in bearing, rearing and burying their children.

But science with its applications has recreated the world. Within a century, or at most two centuries, it has quadrupled the efficiency of labor and doubled the length of life. Steam and electricity enable one

man to do what formerly required a hundred. A needle or a lucifer match is worth a thousand times what it costs. The mail which I send and receive daily at an expense of two or three dollars would cost hundreds of thousands of dollars if each piece were delivered separately without modern methods of transportation. It would take all the time of all the people in the United States to write part of what they now print. In the western world famine is no longer a factor. Cholera, smallpox and the plague have decreased their toll to less than one per cent. of what they once claimed. Infant mortality has been reduced from forty to ten in a hundred. The average life of a woman after the birth of her last child is perhaps three times what it was.

The economy of labor and of life which the applications of science have wrought has abolished the need of productive toil by children and has made possible their universal education. The wealth of society is now sufficient to support adequately every child, to give it the education that opens the gateway to the career for which it is fit, to provide equality of opportunity and a true social democracy. At the same time this education, which can be continued through life, for not more than four hours a day of routine labor by each adult would suffice to provide its necessities, gives the basis for a stable and complete political democracy. The exploitation of children, sex slavery, industrial servitude, kleptocratic classes, have become wanton and intolerable. It is also true that in addition to its economic control, science has been a dominant factor in education and in life. It not only makes the education of all possible, but its subject matter and especially its methods supply the best material for education. It gives us leisure and at the same time means to use leisure

worthily. It has lessened ignorance, superstition and unreason; it has taught us to tell the truth as we see it, and in increasing measure to see the truth as it is.

Material science has provided the economic foundations of democracy. I believe that the science of conduct justifies democracy and will guide its laws and institutions. But this, it must be acknowledged, is only a matter of opinion. One of my college friends has become perhaps the most distinguished mathematical physicist of the world. Standing for parliament recently, the four principal theses of his electoral address were: Maintenance of a hereditary house of lords, introduction of a protective tariff, the denial of home rule to Ireland, state schools under the church. These reactionary policies were endorsed by his election to represent one of the great English universities. So little do intelligence, character and scientific attainment lead to agreement in regard to social and political theories. Each of us is enmeshed in the net of his class, and has but little freedom of movement. The individual does not as a rule act in the light of reason, but by instinct and impulse, and it is well that he does, for they are the safer guides. But while individual conduct is in the main automatic response to chance circumstance, it is possible by forethought to select individuals and to arrange circumstances. Education and scientific research are subject to social control and should be the chief concern of a democratic society.

American democracy has been on the whole favorable to common-school education. It is admitted that our masters must be taught, and in practise this country has led in public elementary education and now leads in the provision of high-school and college education. More than 96 per cent. of all children from ten to fourteen years of age are enrolled in school. There are

one million two hundred thousand students in high schools; a third of a million in higher institutions. Reading and writing have become, like air and water, the common heritage of all. This is the great achievement of democracy in the modern world. Thereby it has assured its own permanence and has opened up the way along which it will advance.

Reading and writing are indeed only pass-keys which unlock various gates. Further progress by way of the newspaper and the moving-picture show is halting. We have inherited the educational ideals of the idling classes and their dependent priests and clerks. The common school prepares for the high school, the high school for the college, the college for "Who's Who." Our scholastic methods, invaluable for intercommunication at a distance in space and time, may inhibit thought and action, even the finer forms of speech and the more direct expression of the emotions. A few days since a neighbor in the country, now over eighty years old, who suffered or enjoyed such educational limitations that she can barely read, wrote to me "I am still alive but i don't know what for." At school she would have been taught to use modestly a capital "I" for the first personal pronoun and not to end a sentence with a preposition. I have learned these things and to use words such as "direct" and "effective," but I do not use words so directly and effectively as my neighbor. One of my children at the age of ten, never having been in school, wrote verses such as:

An army marching through the fields
They had on their shields
They were ready to fight until night
But there was no army to fight

and

The breeze that blows is the salt sea breeze
After instruction in English she relapsed

into the conventional and the commonplace.

Who now can write a sentence such as "In the beginning God created the heaven and the earth," or sentences such as are found on every page of Homer and Dante? In the words of Arnold:

What girl
Now reads in her bosom as clear
As Rebekah read, when she sate
At eve by the palm-shaded well?
Who guards in her breast
As deep, as pellucid a spring
Of feeling, as tranquil, as sure?

What bard,
At the height of his vision, can deem
Of God, of the world, of the soul,
With a plainness as near,
As flashing as Moses felt
When he lay in the night by his flock
On the starlit Arabian waste?
Can rise and obey
The beck of the Spirit like him?

We do not know what well-educated men and women who could not read would be like. If the authors of the Homeric poems could read and write they did not spend much time in such occupations. Certainly they did not learn to use their own language by the study of Latin. A friend asked a porter in a Swiss hotel, who used many languages with equal facility and incorrectness, which was his native tongue. He replied that he did not know, he spoke all languages; then, in answer to the question as to the language in which he thought, "I neva tink."

Children must learn to read, write and calculate, but under proper conditions of family and society schools to teach these tricks would be nearly as superfluous as schools to teach infants to walk and talk. Those familiar with the literature of pedagogic edification will be weary of the iteration that the word "educate" means to lead out, which, not cramming full, should

be the object of our schools. This is not only trite, but also true. Every psychologist knows that perceptions are not there to be perceived, but as a condition of reactions; that we learn by doing; that conduct is the only thing that counts. But it is also true that by its etymology the word "educate" might mean to lead out the individual for the work for which he is fit, to select the "dukes," the leaders, for a democracy. This is the greatest service of education. We learn to do things not by preparing to do them, but by doing them; we get a wider outlook not by so-called cultural studies, but by association with those who have broad and unselfish interests; we must learn what others know, but it is more important to do what we have not been taught and what others have not done. The chief object of the school is to open for each child the gateway to the career for which he is fit. Democracy does not mean equal mediocrity of all, but performance by each in accordance with his ability.

What a man can do is prescribed at birth; what he does depends on opportunity. The famous clause "all men are created equal" was probably intended by Jefferson to mean equal in respect to life, liberty and the pursuit of happiness. However that may be, the doctrine of evolution by natural selection has taught every one that the individuals of a species are unlike at birth. The amount of congenital unlikeness in men and the extent to which it is inherited in successive generations, on the one hand, and the degree to which men can be fitted by education and experience for different performances, on the other hand, are scientific problems on the solution of which depends the future of social and political institutions. If superior ability occurs only or chiefly in certain family lines, if classes, races and the sexes are not only different but subordinated one

to the other by the barriers of an impassable heredity, then an aristocratic society and an oligarchic government are imposed by nature. If each finds of necessity his level and his place by native endowment, then universal education and equality of opportunity are of small significance. If, on the contrary, among five children taken at random from the public schools, one is likely to surpass in ability and character the privileged boy at Groton or St. Paul's; if nine boys out of ten and ten girls out of ten have no chance to show what they are fit to do, then our need is more democracy and better opportunity for the fit.

I have found that of our thousand leading men of science, 134 were born in Massachusetts, 3 in Georgia. For each million of their population, Massachusetts and Connecticut have produced a hundred scientific men of high standing; the states of the southern seaboard but two. Does this disparity measure difference of natural ability or difference of opportunity? The frailties of human nature are responsible for two experiments which, if not executed with scientific precision, have been conducted on a large scale. In this country and in Great Britain, four per cent. of children are illegitimate; in continental cities the percentage is as large as twenty and even forty. It is probable that these children have a physical heredity equal to that of the average child, but their social heritage is inferior, and their performance corresponds with their opportunity. If heredity were predominant there should be among our thousand leading men of science some forty of illegitimate parentage, whereas there are few or none. The mulattoes are by their physical heredity midway between the whites and the negroes, with parentage probably superior to the average in both races. But their social position is that of the negroes, and their per-

formance corresponds with their environment rather than with their heredity. There is not a single mulatto who has done creditable scientific work.

According to unpublished statistics which I have collected, 43 per cent. of our scientific men come from the professional classes who form one thirtieth of the population. Probably one half of them are sons of the one per cent. of the population most favorably situated to produce them. A child must be well born if he is to become a large figure in the world, but there may be tens of thousands of children born with the natural endowments of our productive scientific men who are given no opportunity to develop and use their ability for the benefit of society. A child with the exact constitution of Darwin born in China a hundred years ago would surely not have become Darwin. What chance would he have had in this country, or even in England, if his father had not been a man of wealth? The chief object of our educational system should be to select men and women for the work for which they are most fit. To train them for it is also important, but less so. In England one half of its men of performance have been educated at two universities having together some 6,000 students, nearly all from the dominant classes; one half of its cabinet ministers have come from a few interrelated noble families. It may be that there the object of the universities has been to train the privileged classes, of the trade schools to train artisans. Here the end of our schools is to break down, not preserve, the barriers of birth, to provide opportunity, not privilege.

Our democracy has not failed in its quantitative provision of education, but it has been backward in adjusting this education to its needs. In the elementary school, in the high school, in the conventional col-

lege, to a certain extent in the university with its professional schools, outworn traditions have persisted. The high school and college are in large measure traditional female seminaries of the kind that used to teach "Latin, logic and the use of globes." The colleges of liberal arts when women are excluded tend to unite the amusements and amenities of a country club with the frivolous amateurism and the futile scholasticism of its class-rooms. The schools of medicine and of law have been until recently trade schools of poor grade, proprietary institutions largely conducted for the indirect financial profit of the professors. Endowments are now being provided and standards are being raised, but there is something amiss in a system which does not permit a man to become self-supporting or to engage in his life's work until he is twenty-seven years old. If the cost of a physician's education must be \$10,000, this money should be paid for those most competent to profit from it, not for those only whose parents happen to have so much money.

Nothing could be more undemocratic and anti-social than the plan of endowing—namely, compelling the people to support without the power to control—institutions where the sons of the newly rich may acquire the manners and prejudices of the leisure classes, and at the same time to conduct trade schools in order that there may be cheap skilled labor for exploitation. But the road to democracy may be paved with bad intentions. It is one of the ironies of history that the university endowed by wealthy and pious patrons for the education of the clergy and the upper classes, intended for the support of church and state, should by the nature of knowledge subvert the old orthodoxy and the old social and political system. It is safe to predict

that the trade school will do its share to break down the capitalistic regime.

In the charmingly worded address given by the then professor of jurisprudence and politics at the sesquicentennial exercises of Princeton University, the orator said:

I am much mistaken if the scientific spirit of the age is not doing us a great disservice, working in us a certain great degeneracy. Science has bred in us a spirit of experiment and a contempt for the past. It has made us credulous of quick improvement, hopeful of discovering panaceas, confident of success in every new thing. . . . I should fear nothing better than utter destruction from a revolution conceived and led in the scientific spirit. . . . Can any one wonder, then, that I ask for the old drill, the memory of times gone by, the old schooling in precedent and tradition, the old keeping of faith with the past, as a preparation for leadership in days of social change? . . . I have had sight of the perfect place of learning in my thought . . . calm Science seated there, recluse, ascetic, like a nun, not knowing that the world passes, not caring, if the truth but come in answer to her prayer; and Literature, walking within her open doors, in quiet chambers with men of olden time, storied walls about her, and calm views infinitely sweet; here "magic case-ments, opening on the foam of perilous seas, in fairy lands forlorn," to which you may withdraw and use your youth for pleasure; . . . its air pure and wholesome with a breath of faith; every eye within it bright in the clear day and quick to look toward heaven for the confirmation of its hope.

Fourteen years later the same speaker, with his ear to the ground, heard better voices:

The great voice of America does not come from seats of learning. It comes in a murmur from the hills and woods and the farms and factories and the mills, rolling on and gaining volume until it comes to us from the homes of common men. Do these murmurs echo in the corridors of universities? I have not heard them. (Speech to Pittsburgh alumni, April 17, 1910.)

It is he who listened to the voice of democracy who has been chosen to be its leader.

While it is proper to protest against the

undemocratic survivals in the universities which we have inherited, the great services which they have rendered and now perform should not be forgotten. From the foundation of the universities of Salerno, Bologna, Paris and Oxford to the establishment of the Johns Hopkins, Stanford and Chicago, the university has been one of the principal factors in the advancement of science and in the progress of civilization. Three fourths of our productive men of science are now supported by universities. It is under the ægis of privilege and patronage that we have passed into the dawn of democracy. Our state universities are now assuming leadership, and should be counted with the public schools of which they are the head as our greatest contribution to educational progress and social welfare. The state university, directly responsive to the utilitarian democracy on which it depends, open to men and women on equal terms, selecting from all the people of the state those most fit for higher education and preparing them directly for their work in life, devoted in equal measure to teaching, research and public service, holds high the standard under which we move forward into the newer world.

There is a critical point in intelligence at which it is understood that education and productive science are the investments that pay the highest interest. This nation, thanks to the advances of science and to its natural resources, has the means to educate every child in the manner and to the extent that is desirable for the individual and for society. It has the wealth to make investments in scientific research to the extent that men can be found to carry on the work. The framers of the new income tax estimate that the superfluous personal incomes amount to over eight billion dollars annually, that is, the incomes which some 400,000 families possess beyond \$4,000

a year. This would allow four billion dollars a year for scientific research and the conservation of health and \$200 for each child beyond what is now spent on it. And why should not the money be so used? It would be the investment yielding the largest dividends. Those who spend \$4,000 a year already consume four times the average amount. Some may contribute more than four times the average amount to society, but they do so owing to the opportunity and advantage which society has given them. Thanks to the social order, those spending \$4,000 a year consume at least ten times as much as was possible for the average man a hundred years ago, and this possibility is due chiefly to the services of men now dead, most of all to those who advanced science and its useful applications. We can best reward them and honor their memory by using the wealth which they have created for further progress in the direction in which they led.

How long will it take to learn that the privileges of property are subordinate to the welfare of children? The average salary paid to teachers in the public schools of North Carolina is \$199, of Pennsylvania \$440, of California \$817. The state of Pennsylvania spends on its entire educational system less than one tenth of the value of the coal it mines. When a state consumes its natural resources it should reinvest their entire value in education, scientific research and the public welfare. In 1880 forty per cent. of the teachers in our public schools were men; now the percentage is under twenty; in New England and in New York it is under ten. In Germany four fifths of the teachers are men. Why should ignorant and characterless girls be permitted to practise education on our children because they are cheap? If the salaries of teachers were doubled, some competent men would adopt the profession

for a life work, and the best women could be selected, preferably those who had first cared for children of their own. The applications of science in the conservation of life and the production of wealth have entirely altered the position of women and of the family. In elementary schools the best teacher is the family—husband, wife and children together.

It is for the honor and ultimate welfare of Georgia that 25 per cent. of its population are children of school age, whereas only 17 per cent. of the population of New York and New England—probably less than 12 per cent. of their native population—are of this age. Since 1880 Georgia has increased its per-capita payment for public-school education sixfold; New York and New England have only doubled theirs. In the past twenty years New York and New England have not increased their expenditure enough to make up for the depreciation in the value of money. Georgia spends each year 6.3 mills on the assessed valuation of its real and personal property on public-school education, New York state 4.7 mills.² The south is bent under the inherited burden of slavery and civil war. But if it maintains its birth rate and cares properly for its children and its health, the center of wealth and civilization will return southward.

Over a billion dollars a year are spent in the United States on the drinking of alcohol and its consequences, a comparable amount on prostitution and its ensuing diseases. We devote twice as much money to each of these destructive agencies as to our entire educational work. Pleasure auto-

² Real estate is underassessed in Georgia. In New York personal property is scandalously understated, owing to the tax. Personal property in Massachusetts is valued at more than two thirds of the real estate, in New York at less than one twentieth.

mobiles or moving-picture shows cost each year more than the support of the teachers in all our schools. The national wealth is ample to double the salary of every teacher, from the negress in Georgia who receives \$100 a year to the professor at Harvard who receives \$5,000. The qualifications of the teacher should be as much above those of the lawyer and physician as they are now below them. The dentist who mends my children's teeth earns over \$20,000 a year; the professors and instructors who teach them at the university receive salaries averaging about \$2,000. Teaching can not be made the most honorable of professions by increasing salaries, but this is the easiest way to raise its standards. If we can bring into the work men of ability, they will promote the reforms that are needed. Teachers have inherited the status of domestic servants, and like domestic servants they should free themselves from personal subjugation. It may be that a hundred years hence the English suffragettes and the leaders of the I. W. W. will be counted among the world's reformers. But we can scarcely imagine that it will ever be looked back on as creditable that the salary and even the chair of a university professor should be dependent on the favor of a superior official, or that the educational authorities of our largest city should forbid the employment of married women as teachers; should permit a woman teacher to marry, but should discharge her if she bears a child.

Both the difficulties of state and endowed education and the possibilities of education in a democracy are exhibited by the performance of institutions such as the Scranton International School of Correspondence and Valparaiso University, which by the initiative of single individuals can compete successfully with all the resources of state support and private philanthropy. It is a triumph of democracy that such institu-

tions are possible; it is a scandal of democracy that they exist. The same observation may be made in regard to our private universities and the corporations for research established by Mr. Carnegie and Mr. Rockefeller. It is a fine thing that private means should be so used; it is humiliating that the taxation of steel and kerosene and the use of the proceeds should be left to individual caprice instead of being attended to by the state. Monopolies by which it is possible to charge more for a service than it costs must be controlled or conducted by the state. In like manner services rendered not to an individual but to society must be paid for by society. The most important of these services are creation in science and the bearing and rearing of children. Their performance is dependent on fundamental instincts implanted for their use to the race rather than to the individual and liable to atrophy or perversion under the artificial conditions of contemporary rationalism.

Under oligarchic institutions scientific research may be a by-product of the leisure classes and may be rewarded by patronage and honors; the bearing of children may be encouraged by non-rational patriotic and religious sanctions. In a democratic society research should be paid for by the state and the cost of bearing, rearing and educating children should be shared equally by all. Apart from the individual joy and profit in living—whatever that may be—each youth twenty years of age not below the average in endowment is economically worth to the state at least \$10,000 in that he will produce so much wealth in excess of what he will consume. The exceptional individual may be worth a hundred million dollars. It is the business of the state—its principal business—with one hand to provide for the advancement of the material sciences and the sciences concerned with human conduct, with the other hand to care

for the production of well-born children and their preparation for the work for which they are fit.

Existing conditions would be discouraging if they were a relapse from better things; but this is by no means the state of affairs. The defects of our system of education, our lack of distinction in science, art and letters, the shortcomings of our political and social institutions, are due in larger measure to the survival of standards and traditions from a pre-democratic world than to the difficulties inherent in a democracy. We may complain of our simplicity and crudeness, of our waste and incompetence, of our selfishness and corruption, but this only means that human nature and human conduct are what they are. Montesquieu was doubtless correct in saying that virtue is the principle of democracy, but of what social or political system is it not the basis? In what other nation would the people respond to the call of the primitive virtues with so much alacrity as here under the leadership of men such as Mr. Roosevelt, Mr. Wilson and Mr. Bryan? While virtue is essential to a nation, intelligence is desirable. The state should not neglect the advancement of science and be content to provide a hereditary system of education handed down from generation to generation. The Chinese have learned better.

The way to improve our educational work is to make the career of the teacher such that the wisest men and women of the country may be drawn to it, and then to give them opportunity and encouragement to develop a science of education and to apply it. In our universities, especially in our state universities, we have laid the foundations. The national government in its land grants to colleges of agriculture and the mechanic arts, in its bureau of education and in other directions, has ac-

complished something, but not enough. The secretary of a department of education and science should be the ablest man in the country, the president only excepted. The federal government can make the most noteworthy advance by the establishment of a national university at Washington to coordinate the work of its departments, to advance science and education, to set standards to the states. The ideals of a people must be symbolized in institutions. To substitute a constitution for a crown is futile. The ideals of a democracy can best be embodied in a great national university. We should then join with other nations in the establishment of an international university.

It is clearly impossible in a forty-minute address to discuss the contents and methods, the objects and results, of education, from the kindergarten to the university, from the crib to the death-bed. It is exactly those subjects on which we are most ignorant that can be talked about most endlessly. I have not hesitated to express opinions on various occasions³ and have indicated some of them in the course of these remarks. But my plea is that the time has now come when opinions, traditions and rule-of-thumb methods should yield to a science of education. Feeble infant as is this section of education of the American Association for the Advancement of Science, it has more promise of development than the best organized political party or the most richly endowed denominational church. It is the old story—"The harvest truly is plenteous, but the laborers are few." If we could only realize what it would mean to have a science of education, a science of health, a science of conduct, surely all the resources of our civilization

³ For example, in three addresses published in *The Popular Science Monthly*, "Concerning the American University" (June, 1902), "The School and the Family" (January, 1909), and "The Case of Harvard College" (June, 1910).

would be turned in this direction. And they will be. The progress of the physical sciences in the nineteenth century will in the coming century be paralleled by advances in the psychological sciences. Science and education have given us democracy; it is the duty and the privilege of democracy to repay its debt by forwarding science and education to an extent not hitherto known in the world's history.

J. McKEEN CATTELL

THE PROFESSORSHIP OF PHILOSOPHY AND
PSYCHOLOGY AT LAFAYETTE
COLLEGE

At a largely attended joint meeting of the American Philosophical Association and the American Psychological Association, held at New Haven, December 31, 1913, the report of a committee appointed to inquire into the circumstances connected with the resignation of Dr. John M. Mecklin from the professorship of philosophy and psychology at Lafayette College was read and approved, *nemine contradicente*, and ordered printed. The committee was composed of Professors A. O. Lovejoy, of Johns Hopkins (*Chairman*), J. E. Creighton, of Cornell; E. Hocking, of Yale; E. B. McGilvary, of Wisconsin; W. T. Marvin, of Rutgers; G. H. Mead, of Chicago, and H. C. Warren, of Princeton. The report involves principles of general interest to American university teachers and administrators; and the more essential parts are, therefore, here reproduced at length.

The committee's understanding of the scope and purposes of its inquiry is set forth in its original letter to Dr. E. D. Warfield, president of the college:

The function of the committee is primarily to secure an authoritative statement of the facts in the case which can be laid before the members of the associations (of both of which Professor Mecklin is a member) at their approaching annual meetings, for their information. The concern of these bodies in the matter is twofold. They consist for the most part of members of the university teaching profession, and they are therefore anxious to ascertain the reason for any action which may have

the effect of injuring the professional standing and opportunities of any of their own members. It would seem, in the second place, desirable that the members of these associations should know somewhat definitely what doctrinal restrictions are imposed upon teachers and investigators in philosophy and psychology in the principal American institutions of learning. Such knowledge it is important to our members to have, both in order that their action in making recommendations for positions and the like may be guided thereby, and also that in their judgment of the department of philosophy and psychology in any institution, they may bear in mind the predetermined limits of liberty of opinion which affect the tenure of professorships in that institution. It has been publicly asserted that restrictions of this kind obtain at Lafayette College.

In its attempt to secure the desired information the committee, of course, turns first to yourself and to Professor Mecklin. We shall therefore be greatly obliged if you will let us know whether the statements already published in *SCIENCE* and the *Journal of Philosophy* regarding the circumstances of Professor Mecklin's resignation seem to you accurate, and what your understanding is as to the doctrinal requirements imposed upon professors of philosophy and psychology at Lafayette. The points about which we especially desire to be informed are indicated by the accompanying questions; we shall be obliged if, as an aid to giving definiteness to any statement which the committee may prepare on the subject, you will cover these questions in the reply which we hope you will be good enough to let us have.

The appended questions were as follows:

1. Was the resignation of Professor Mecklin called for by the administrative authorities of Lafayette (a) because of certain doctrines held or taught by him; or (b) because of certain doctrines contained in the text-books used by him?
2. In either case, what, specifically, were the opinions or teachings to which objection was made?
3. Are the statements made by Professor Mecklin in *The Journal of Philosophy* of September 25, 1913, regarded by the administrative authorities of Lafayette College as giving a substantially accurate and sufficient account of the facts in the case?
4. Is subscription to any specified creed a requisite to appointment to a professorship in Lafayette College?
5. Are the professors of philosophy and psychology required, so long as they hold their positions,